

Application No.: 10/644,821
Examiner: David A. Rogers
Art Unit: 2856

Amendments to Claims

The claims are amended as shown on the following pages under the heading LIST OF CURRENT CLAIMS. The list shows the status of all claims presently in the application including any current amendments. This list of current claims is intended to supercede all prior versions of the claims in the application.

LIST OF CURRENT CLAIMS

Claims 1 - 7 (Canceled)

8. (New) A sampling tube-type smoke detector comprising:

an optical smoke detection device arranged to detect smoke particles contained in air suctioned through a sampling tube from a monitored area;

an aspirator positioned downstream of said smoke detection device arranged to suction air through said sampling tube;

a lead-in tube arranged to convey air from said sampling tube to said aspirator;

said aspirator comprising a rotating part that sucks air through and discharges air from the lead-in tube and an actuator mechanism driving said rotating part in rotation about a rotational axis;

said lead-in tube being connected to said aspirator through an expanded part of the lead-in tube and in which expanded part the flow path expands along the traveling direction of the air;

said lead-in tube and said aspirator being oriented with the central axis of said lead-in tube and the rotational axis of said rotating part being substantially coaxial;

said lead-in tube, optical smoke sensor unit and aspirator disposed in substantially a linear alignment.

9. (New) The sampling tube-type smoke detector according to claim 8, wherein said lead-in tube has a substantially round-shaped cross-sectional form defining a lead-in tube inner wall surface;

said lead-in tube and said expanded part are connected with a connection part defining a connection part inner wall surface; and

said connection part inner wall surface intersecting said lead-in tube inner wall surface and said expanded part inner wall surface along a smoothly contoured curve.

10. (New) The sampling tube-type smoke detector according to claim 9, wherein said connection inner wall surface joins an inner wall surface of said expanded part of said lead-in tube and is configured as a smoothly curved contour having a substantially semi-spherical shape; and

said connection part is attached to said lead-in tube adjacent to said aspirator.

11. (New) The sampling tube-type smoke detector according to claim 9, wherein said connection part is equipped with a restricted aperture defined by an aperture diaphragm opening smaller than the inside diameter of said lead-in tube central part;

wherein the center of said aperture diaphragm opening is arranged substantially on the centerline of said lead-in tube.

12. (New) The sampling tube-type smoke detector according to claim 11, wherein said aperture diaphragm opening of said aperture has a diameter of 30 to 70 percent of the inside diameter of said lead-in tube.

13. (New) The sampling tube-type smoke detector according to claim 9, said aspirator including a body part and a discharge part;

said body part containing said rotating part and said actuator mechanism;

said discharge part arranged to discharge air from said rotating part to the outside of the smoke detector,

said discharge part arranged in a 90 degree direction relative to said rotational axis of said rotating part;

said discharge part discharging air made to flow in a straight line from said lead-in tube and said expanded part to an inlet of said aspirator;

an air duct for discharging air from said rotating part arranged in a periphery of said body part;

a discharge vent formed in said discharge part; and

said discharge part equipped with a guide which forms a smoothly curved transition surface between said air duct and said discharge.

14. (New) The sampling tube-type smoke detector according to claim 11, wherein said aperture diaphragm opening is disposed between said smoke sensor unit and said aspirator.

15. (New) The sampling tube-type smoke detector according to claim 11, including an inter-connection part between said connection part and said aspirator, said interconnection part including a smoothly expanding inner surface and an interconnection part outlet, said inter-connection part outlet being larger in cross section area than the cross section area defined by the inner wall surface of the connection part; said lead-in tube, connection part and inter-connection part being formed as one continuous integral piece.